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|  | **Algebra 1 Notes** |
| Lecture Notes |  |
| Main Ideas | **Details** |
| Vocabulary | * Variable= a letter or symbol that represents a number (example: x) * a+b cannot be simplified * a+a=2a * ab=a x b * Coefficient=number in front of a variable (example: 2x…2 is the coefficient) * Exponent= the power a number is raised to * Like terms=terms whose variables and exponents match * Ex: 2a3 and 3a3 are like terms * Ex: 2b4 and 2c5 are not like terms * Expression= a sentence of numbers, variables, coefficients, and sometimes operations *without* an equals sign or inequality (example: 2x+5) * Equation= a sentence of numbers, variables, coefficients, and sometimes operations *with* an equals sign or inequality (example 2x+5=9) |
| Exponential Notation | * 23 = 2 x 2 x 2 * a3 = a x a x a * Even number of negative signs = positive answer * Odd number of negative signs = negative answer * Ex: (-m)(-m)(-m)(-m) = ? |
| Addition and Subtraction with algebraic terms | * Combine like terms * Add/subtract coefficients * Ex: 2y + 5y * Ex: 3x2y + 3x2 + 5xy2 –xy2 + 2x2y – 3x2 |
| Multiplying Numbers in Exponential Notation | * To multiply expressions with the same base,  1. Add the exponents. 2. The base stays the same.  * Ex: aman = a(m+n) * Ex: z3 z6 = ? * To multiply expressions without the same base:  1. Multiply coefficients. 2. Add exponents of like bases. 3. Always make sure the bases are the same before you add exponents.  * Ex: 7abc4 9a5b3c = ? |
| Power to a Power | * To raise a power to a power:  1. Multiply the exponents. 2. The base stays the same  * Ex: (a2)3 = a(2x3) = a6 * Ex: (p2)4(p4)3 = ? |
| Product to a Power | 1. Use the distributive property 2. Distribute the exponent to each of the factors inside the parentheses  * Ex: (ab)c= ac bc * Ex: (-3q)4 = ? |
| Division of Exponential Terms | * To divide expressions with the same base:   1.Write the division problem as a fraction  2. Subtract the exponents  3. The base stays the same   * Ex: am / an = am-n * Ex: x4y3z2/xyz = ? |
| Division of Algebraic Terms with a Coefficient | * To divide expressions with the same base:   1.Write the division problem as a fraction  2. Divide the coefficients  3. Subtract the exponents  4. The base stays the same  Ex: 30p4/5p = ? |
| Zero as a Power | * Any expression to the “Zero” power =1 * 00 is undefined * Ex: zz /zz =1 |
| Negative Exponents | * A number with a negative exponent equals its reciprocal written with a positive exponent. * Ex: t3 / t5 = t-2 = 1/t2 * Ex: 1/p-2 = ? |
| The Distributive Principle for Multiplication | * Distribute the items outside of the parentheses to all terms inside the parentheses * Ex: a(b+c)= ab+ac * Ex: x(y2 – 4y) = ? |
| The Distributive Principle for Division | 1. Distribute the denominator 2. Divide the liker terms 3. a/a =1, so cancel it out  * Ex: (ab + ac )/a = ab/a+ac/a =b+c * Ex: 100x2 + 10x/10x = ? |
| Factoring | * Finding the terms multiplied together to get the original expression. * Ex: 24 = 2 x 3 x 4 * Prime factorization: factoring as far as possible to reach only prime numbers * To factor algebraic expressions, look for a common factor in all the terms in the expression. * Ex: 3a + 9c = 3(a+3c) * Like reverse distribution * Ex: 8c2 – 4c = ? |
| Evaluating Expressions | * Replacing letters with numerical values in an algebraic expression * NOTE!! This is only done when the numerical value is known! * Ex: If a=1 and b=6, then a+b= 1+6 = 7 * A good habit it to place parentheses around numbers when you substitute them for letters so that you remember the operation. * Ex: If a=5 and b=2, ab ≠ 52, ab= (5)(2)=10 * Ex: What is ab – (a+b) ? * When expressions are complex, simplify as far as you can before substituting the variables. * Ex: (-3ab2)3 =? |